WIDE AREA NETWORKS STRUCTURAL ANALYSIS APPLICABILITY FOR CALL CENTERS

The cost of building and operating a large-scale call-center depends, in a large extend, on how well designed it is. The transport cost, very often responds for at least 50% of the total expenses. Most call-centers operators delegate the operation of their transport infrastructure to third part companies (Usually carriers), which charge them a flat rate per spoken minute which is recharged to their clients with a small spread. In addition of that most call-centers operators don't have a clear view of the correlation between each service and the costs necessary to implement it.

Carefully crafting network designs is a alternative which consists of, using mathematical models, statistical techniques, algorithms and computer assisted mass data analysis to identify the most cost-optimized network with an established optimal correlation between the call-centers users geographical dispersion, its traffic volumes/flows, the tariff system. This strategy tends to produce much more cost effective call-centers operations while providing for the scalability most organizations require in today's environment.

To over engineer a network does not require tools or elaborate processes. The true challenge lies in the design of an optimal structure which minimizes cost while maximizes performance. With this understanding in mind, Ariete® was developed and specifically designed to fill the gap created through ad-hock implementations.

Our main objective is, therefore, to create a structure, which minimizes the costs involved with transporting the calls while maintaining the same high levels of service the clients have become accustomed to. The magnitude of savings normally achievable is directly related to the geographical dispersion of the call-center users, however, through the careful analysis of the traffic flows, interconnection costs and the local tariff rules, one can generate substantial reductions of the actual expenditures. In specific implementations, it was far fetched to find over 30% savings on average in real dollar terms.

The whole process pivots on trying to make the call-center structure as compatible as possible with the users geographical dispersion and Interconnection costs (tariff system).

From a call center's structure perspective, the process takes into account all aspects of the call center. This includes:

- Data circuits
- Voice trunks
- PBX's
- WAN switches (e.g. Cisco IGX)
- Routers
- IVR
- CTI
- Management devices
- Live attendants

Moreover, through the process described here we can identify the correlation between traffic volumes, infrastructure cost and revenues as they relate to the services offered by the call centers. For example, assume that a new service is being considered by the business as an additional service offering from one or all of the call centers in a country. The analysis described in this document enables the modeling of business cases identifying the correlation between each new call-center service and the associated cost involved in implementing it effectively.

Since most cases require a very quick and accurate analysis, the automation of this process allows for the simulations and results to be compiled within very short time frames. This enables the business to consider several scenarios with clear definitions and documentation of the costs and benefits of each service before implementing it.

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By providing such elaborate and accurate information to the business, this methodology becomes a powerful decision support tool. It makes it possible to generate simulations where the break-even points are identified and shows how different volumes, topologies, technologies or interconnection service providers influence the overall cost of the structures analyzed.

In fact, one of the main benefits provided by this methodology is to give us the capacity to easily identify the ideal call-center structure. We achieve this result based on our capacity of using computers, comparing all possible combinations to transport voice/data flows among sources of traffic and their destinations. It is particularly useful when re-designing or expanding already in place Call-centers structures.

When the data processing phase is finished we have the ideal structure to support the given amount of traffic identified.

The calculation process produces all the project details: Topology, equipment, access circuits, backbone circuits, paths, service providers and management. Consequently, having this clear view of what needs to be implemented and/or changed we are able to construct the whole project plan, including phases and schedules. With a clear view of the effort necessary to adjust/implement the call-center structure we are ready to decide how, when or if the project will be implemented.

The magnitude of the savings achievable following this alternative varies and is directly related to the geographical dispersion of the company's sites. However, through the careful analysis of traffic flows, interconnection costs and tariff rules, it isn't unusual to find over 30% savings in real dollar terms.

Although the identification of an ideal structure to support a given traffic volume is in itself already a huge benefit we can go one step further. Having a tool, which allows us to calculate these structures quickly, opens the door to work through many calculations using several traffic volumes. Through this analysis we can establish the correlation between volume and cost.

Having a dynamic model enables us to analyze how the variables involved influence each other and verify how changing each one of them affects the overall cost of the structure.

These correlations allow the design team to make decisions with respect to a wide range of issues, from the purely technical to strategic. For example:

Market strategies

- The minimum amount of users necessary to make the services feasible
- Services provided.
- How much is charged by each service

Operational strategies

- Who pays for the Access (availability or not of 800 access)
- Whether or not the company provides local numbers
- Services are provided only through the IVRs, only by live attendants or both.
- In or out source the live attendant and transport

Technical strategies

- Whether or not to use traffic caption network of nodes
- Distribute IVRs or not
- Voice compression rate
- Acceptable quality of Service
- Hardware and interconnection providers
- Interconnection technologies

Decisions as the ones above mentioned are very hard to make without an automated tool that analyzes all aspects of the issue. It becomes even harder when varying the demand that the call-center is suppose to handle.

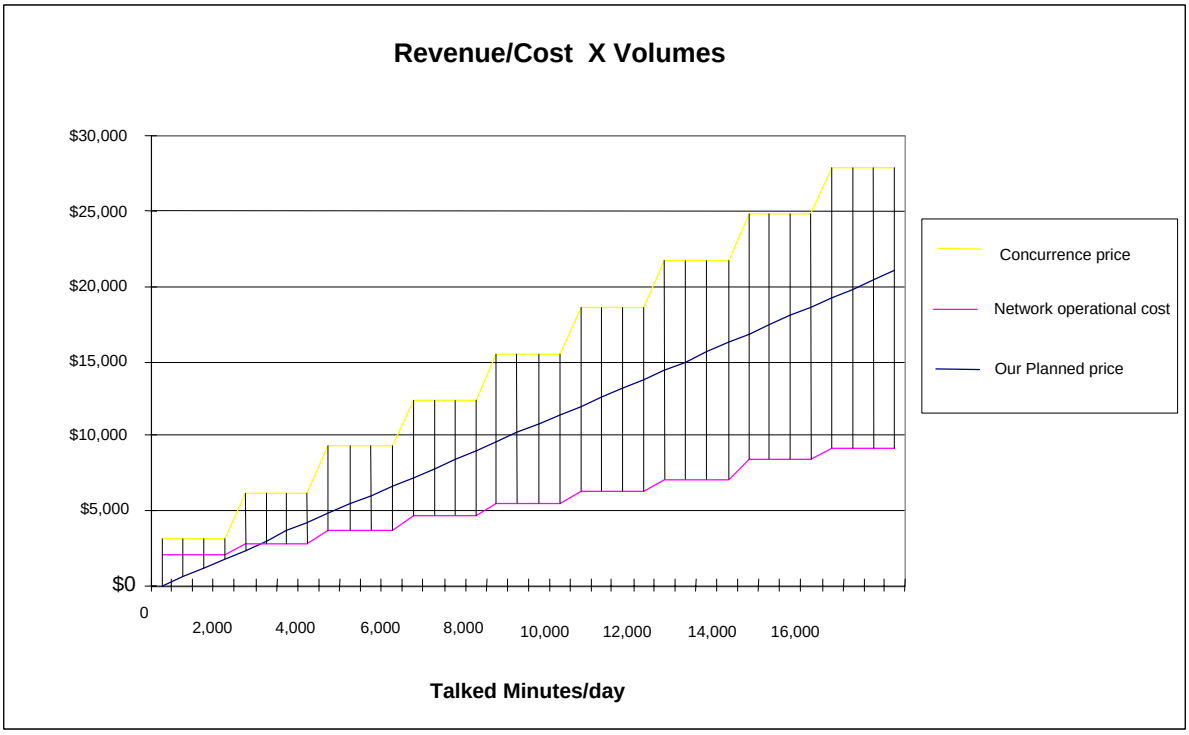
Using this tool to perform this analysis we can establish the correlation between all variables involved. In other words we can model the problem.

The capacity to analyze the structure dynamically allows us to verify the cost associated in implementing each new service, assuming different percentage of the users population will be using it. Therefore if we have an income or revenue associated with the transactions performed by the call-center we can even produce a return over investment analysis and show where the breakeven point is as with respect to an individual service.

As mentioned before the analysis provides the ability to make well-educated decisions such as who pays for the access, which services will be offered only through the IVRs or only through live attendants.

For instance, if we verify that 90% of our users are located inside the area codes of our nodes we may consider the alternative of not providing 800 services for these areas at all.

Example:



If for instance we have an infrastructure already in place we should compare the costs of the new call-center with the actual one. At this point it will become clear which cost factors in the actual structure could be reduced and we can produce a very straightforward, High-level managerial report, comparing the actual expenditures with the proposed ones. Typically we state as clearly as possible the potential real of savings and the investment necessary to implement the proposal. With the results of this calculation we can identify the cost of the proposed infrastructure and compare it with the actual cost. We can also calculate the savings and return over investment of the project. In the past, it has been quite common to find savings in excess of 30% of the actual recurring costs.

We can further analyze alternatives such as outsourcing or external management. Having a clear view of how much it would cost to build ones own infrastructure gives the organization

a better understanding of how much would be reasonable to pay for an external management or a complete outsourced solution. In addition, when soliciting bids for an outsourced solution, the process is again simplified since the parameters around the requirements are predefined and constant. This gives the organization the ability to compare apples to apples when reviewing the proposals and so make the evaluation process simple in this respect.

Solutions for analyzing wide are networks (Ariete®)

Ariete is an advanced tool for analyzing wide area networks; designed to help organizations analyze their telecommunications needs. This is achieved through establishing the optimal correlation between the organizations geographical dispersion, its traffic volumes/flows and the tariff system. The tool itself (Ariete) is the core of a methodology for identifying the ideal WAN structure. The process follows the following three stages:

- Data gathering/files preparation
- Ariete deployment
- Results refining

Data gathering/Files preparation – phase 1

The first phase consists of identifying and formatting the data necessary to perform the analysis. The required information is grouped into seven categories:

- Services provided by the call-center
- Sources of traffic (Clients' geographical distribution)
- Attendance sites
- Interconnections
- Interconnection costs
- Hardware modularity and costs
- Potential clustering nodes.

Ideal structure identification –phase 2

The second phase consists of deploying the tool. Based on the data identified in the previous phase, the tool generates all possible clustering scenarios (topologies), from a totally distributed wide area network to a totally centralized one, and calculates all possible combinations of access, backbone and hardware for each scenario and set aside the more cost effective ones.

Refining the results – phase 3

The third and last phase of the analysis refines the results, allows verification and client specific considerations. In this phase changes are implemented and the models adjusted, setting several scenarios taking in consideration several levels of services (adjusting parameters such as utilization rate, tolerable latency, loss rate etc).

With the resulting optimum structure, outputs produce project details of: topology, equipment, access circuits, backbone circuits, paths, maintenance and management.

Having the target infrastructure makes it possible to compare the results with the actual network. Consequently, it makes it possible to identify what needs to be implemented and/or changed and set the whole project plan, including phases and schedules. Knowing the effort necessary to adjust/implement the network, allows the company decide how, when or if the project will be implemented.

At this point, it becomes clear which cost factors in the actual structure could be reduced and possible to produce a very straightforward, high-level management report comparing the actual expenditures with the proposed ones. The necessary investments and potential savings can be clearly identified and the return over investment of the project calculated.

In addition, it becomes possible to properly analyze alternatives such as outsourcing or external management. It happens because knowing how much would be the cost to build an optimized structure, in house, becomes possible to fairly evaluate the cost benefits of various outsourced solutions.

Although the identification of an ideal structure to support a given traffic volume is in itself a huge benefit, more can be done. Having the ability to calculate these structures quickly allows the organization to perform many calculations using several traffic volumes and establish the correlation between volume and cost.

The possibility of setting many volume scenarios is extremely useful since it allows for a clear verification of how the infrastructure cost changes with the volumes transported.

The following case illustrates how carefully crafting networks can help companies reduce their telecommunications costs and at the same time keeping or increasing the actual quality of services.